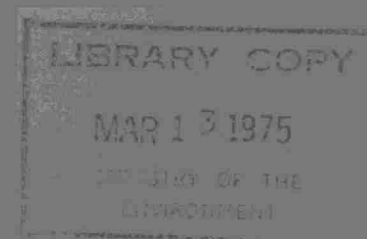


OPERATING SUMMARY

RED LAKE TWP.

WATER TREATMENT PLANT and
WATER POLLUTION CONTROL PLANT



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M. Reid

RED LAKE TWP.
WATER TREATMENT PLANT
and
WATER POLLUTION CONTROL PLANT

MINISTRY OF THE ENVIRONMENT

1973 ANNUAL OPERATING SUMMARY

prepared by
Plant Performance Unit
TECHNICAL SERVICES BRANCH
T. Cross, Director

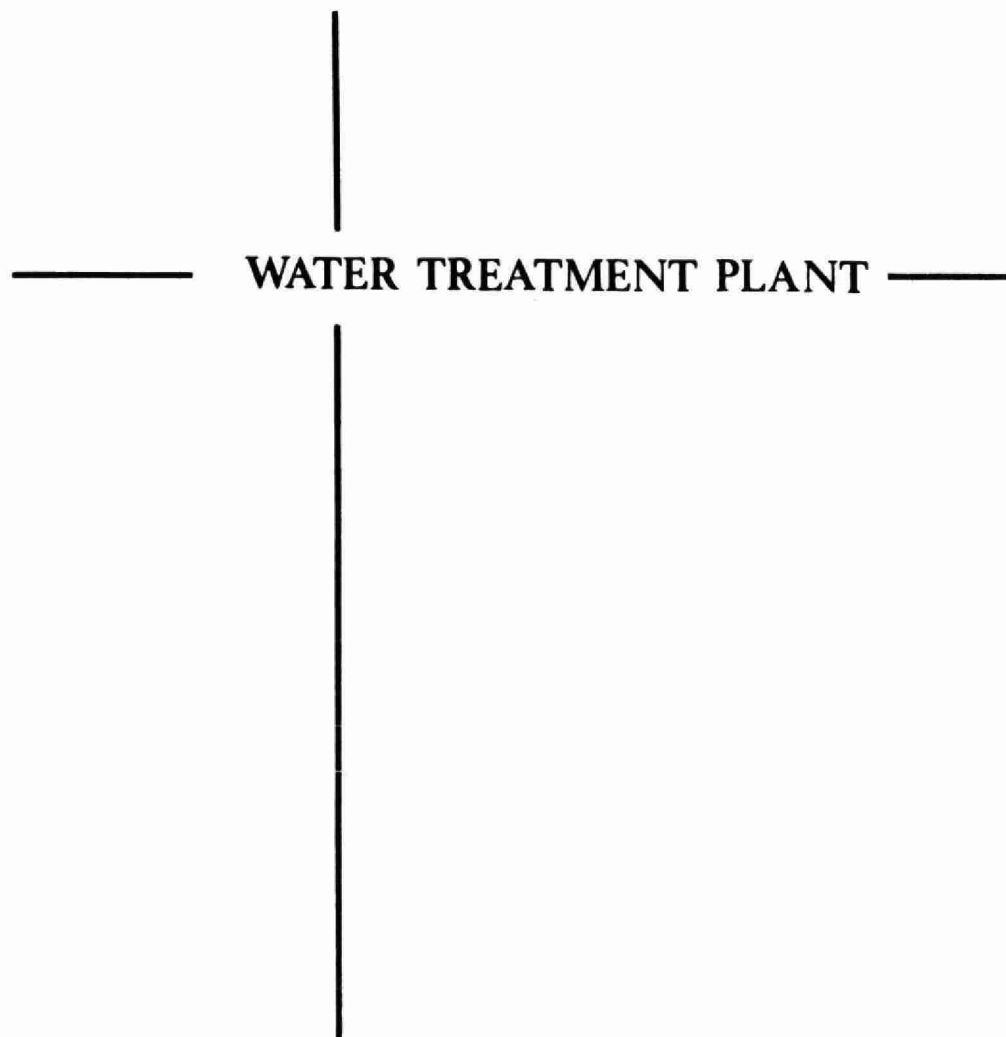
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WATER TREATMENT PLANT

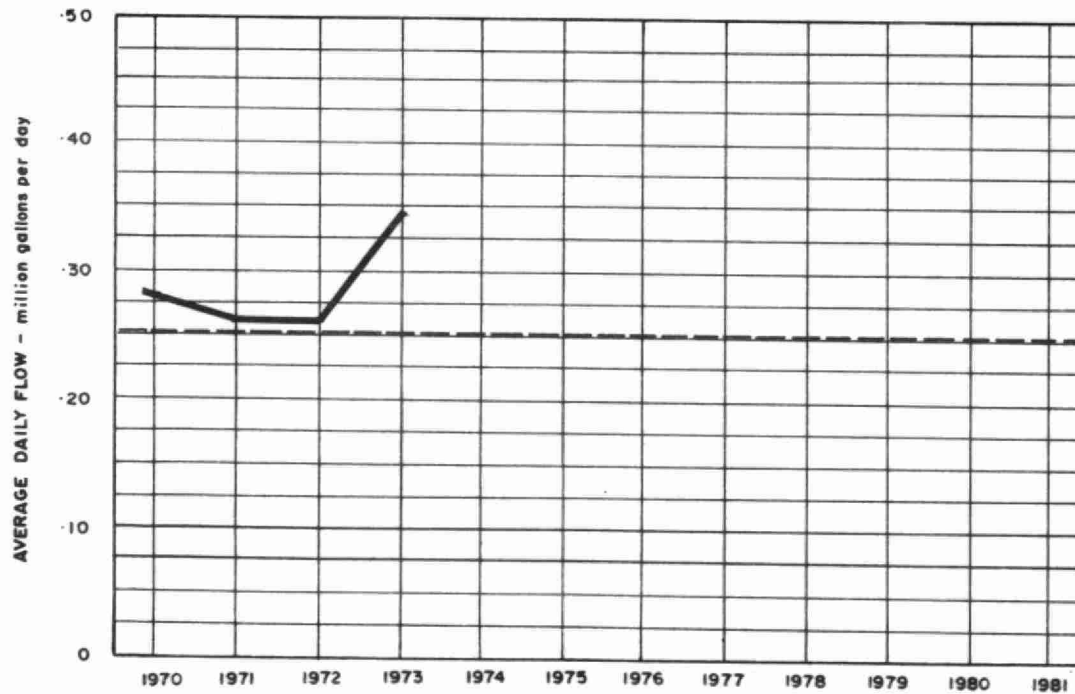
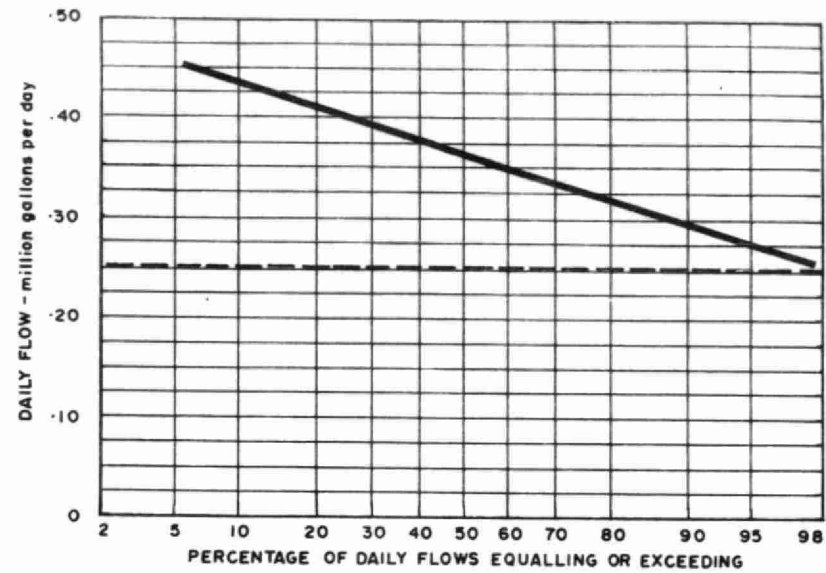
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WATER POLLUTION CONTROL PLANT

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PROCESS DATA FLOWS



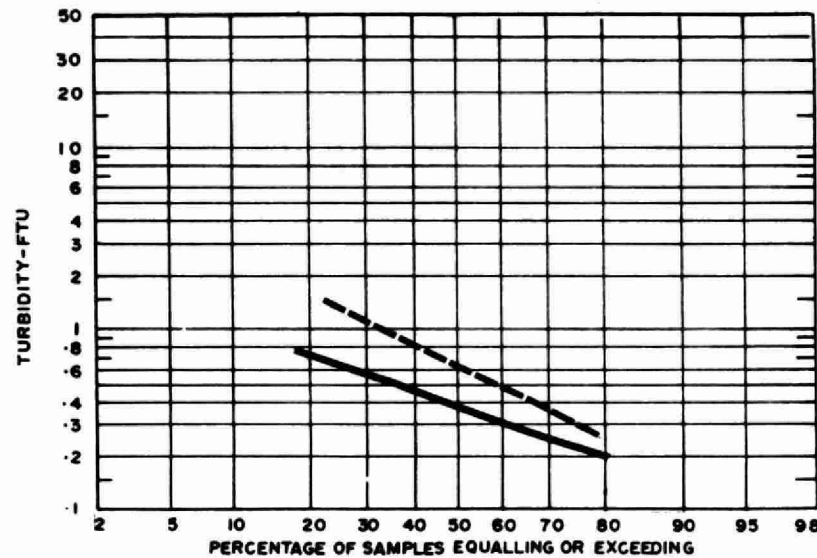
PLANT PERFORMANCE

MONTH	FLOWS				RAW WATER		TREATED WATER					
	TOTAL PLANT OUTPUT million gallons	AVERAGE DAILY FLOW million gallons	MAXIMUM DAY'S FLOW million gallons	MAXIMUM RATE mgd	TURBIDITY (AVERAGE) FTU	COLOUR (AVERAGE) App. units	TURBIDITY		COLOUR		TEMPERATURE	
							AVERAGE FTU	MAXIMUM FTU	AVERAGE App. units	MAXIMUM App. units	AVERAGE ° F	MAXIMUM ° F
JAN	11.37	0.37	0.40				0.55	0.55	10	10		
FEB	10.81	0.39	0.41		0.35	20	0.40	0.40	20	20		
MAR	11.87	0.38	0.41		0.70	15	0.25	0.25	10	10		
APR	11.48	0.38	0.43									
MAY	10.12	0.33	0.38									
JUNE	8.68	0.29	0.34									
JULY	9.78	0.32	0.36									
AUG	10.29	0.33	0.37									
SEPT	10.03	0.33	0.38									
OCT	10.98	0.33	0.41									
NOV	12.88	0.43	0.50									
DEC	14.06	0.45	0.53		1.50	30	0.75	0.75	<5	<5		
TOTAL	132.35											
AVG.		0.36	MAXIMUM 0.53	MAXIMUM	0.85	21	0.50	MAXIMUM 0.75	10	MAXIMUM 20		MAXIMUM

CHLORINATION and DISINFECTION

MONTH	RAW WATER					PLANT EFFLUENT		DISTRIBUTION SYSTEM		CHLORINATION			
	NUMBER OF SAMPLES HAVING TOTAL COLIFORM ORGANISMS PER 100 ml OF					NUMBER OF SAMPLES TAKEN	NUMBER HAVING COLIFORM ORGANISMS	NUMBER OF SAMPLES TAKEN	NUMBER HAVING COLIFORM ORGANISMS	TOTAL AMOUNT OF CHLORINE USED pounds	DOSAGE		RESIDUAL IN PLANT EFFLUENT mg/l
											PRE - mg/l	POST - mg/l	
	0	1 - 3	4 - 32	33 - 320	> 320								
JAN	1	0	0	0	0	3	0	2	0	319	2.8		0.7
FEB	0	0	0	0	0	3	0	3	0	299	2.8		0.7
MAR	0	0	0	0	0	0	0	0	0	335	2.8		0.7
APR	0	0	0	0	0	0	0	0	0	331	2.7		0.7
MAY	0	0	0	0	0	0	0	0	0	321	3.2		0.7
JUNE	0	0	0	0	0	0	0	0	0	295	3.4		0.7
JULY	0	0	0	0	0	0	0	0	0	330	3.3		0.6
AUG	0	0	0	0	0	0	0	0	0	348	3.4		0.6
SEPT	0	0	0	0	0	0	0	0	0	339	3.4		0.6
OCT	0	0	0	4	0	4	0	4	0	283	2.5		0.6
NOV	1	0	2	1	0	4	0	4	0	375	2.9		0.7
DEC	1	0	0	3	0	3	0	4	0	390	2.8		0.7
TOTAL	3	0	2	8	0	17	0	17	0	3945			
AVG.	24 (NOTE - Average shown is the GEOMETRIC MEAN)									11 pounds per day	3.0		0.7

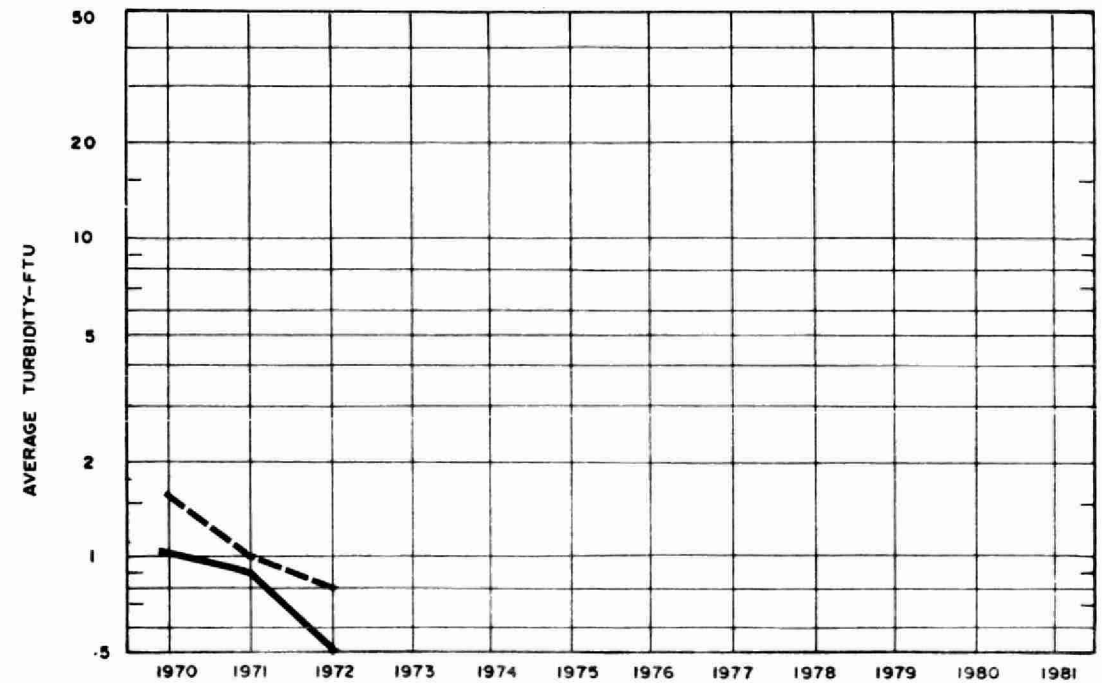
TURBIDITY



RAW WATER

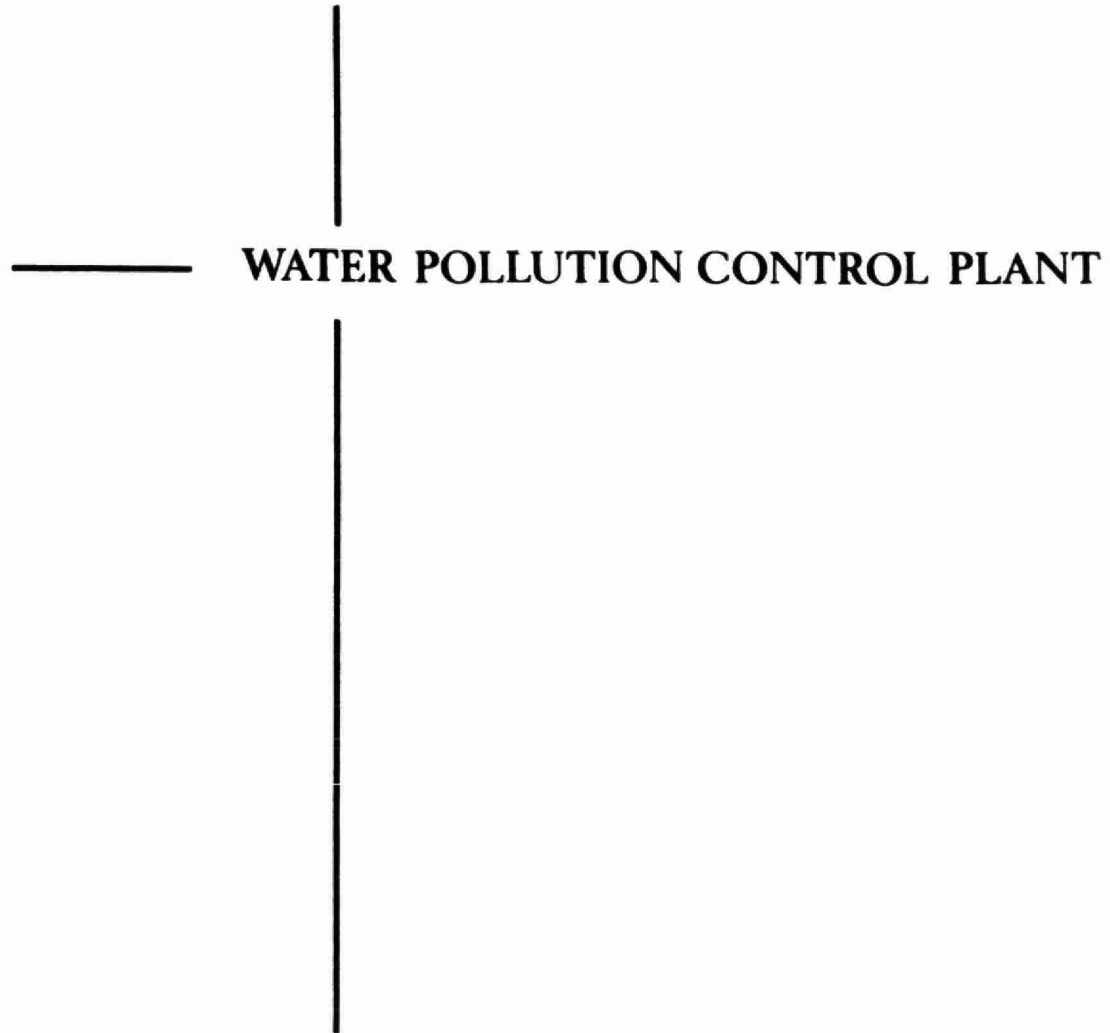
TREATED WATER

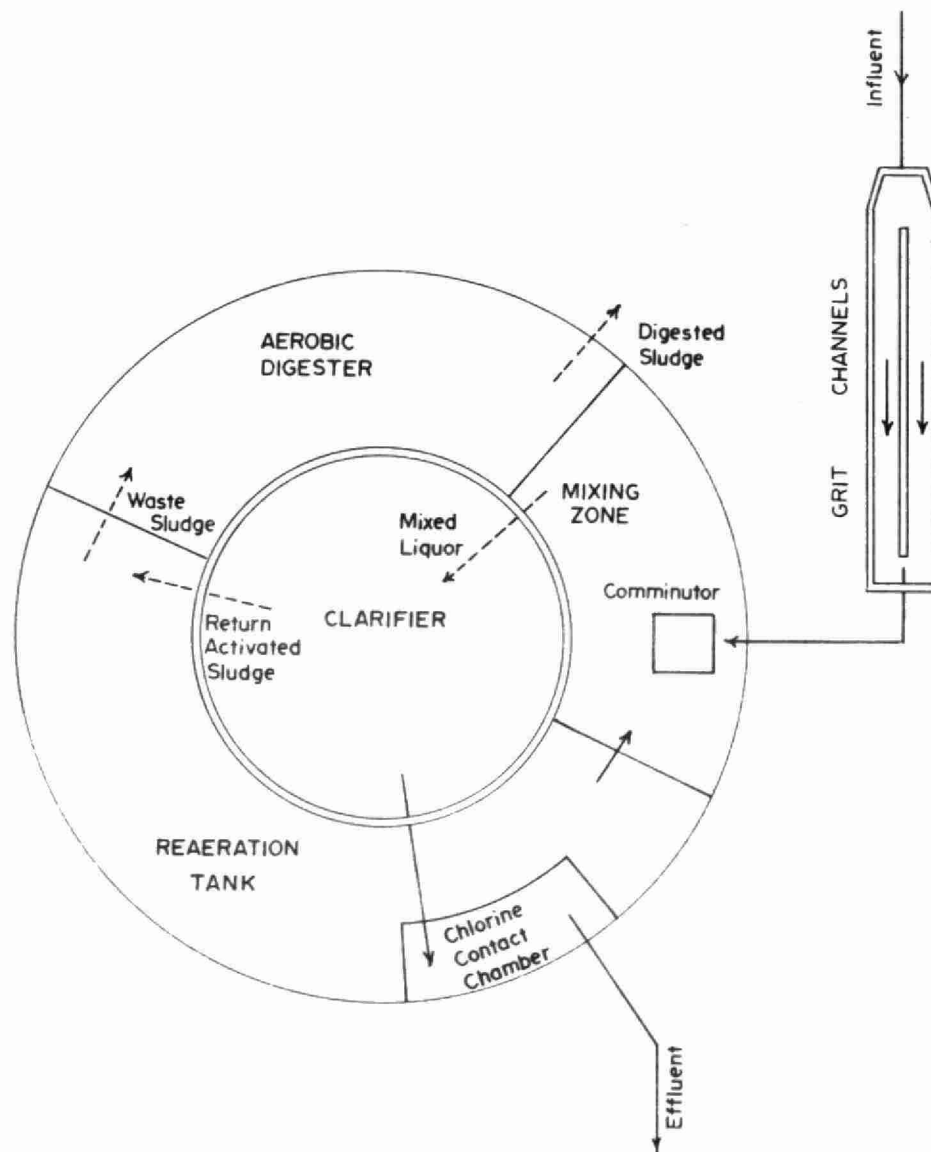
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WATER QUALITY

PROPERTY	RAW WATER				TREATED WATER				DESIRABLE STANDARDS
	NUMBER OF SAMPLES	AVERAGE	MAXIMUM	MINIMUM	NUMBER OF SAMPLES	AVERAGE	MAXIMUM	MINIMUM	
HARDNESS in mg/l as CaCO_3	4	26	32	24	5	27	32	24	80 - 100
ALKALINITY in mg/l as CaCO_3	4	25	27	23	5	20	26	19	30 - 100
IRON in mg/l Fe	4	0.11	0.20	0.05	5	0.07	0.10	0.05	Less than 0.3
CHLORIDE in mg/l Cl^-	4	<1	<1	<1	5	2	2	1	Less than 250
pH in pH units	4	7.2	7.4	6.8	5	7.0	7.4	6.8	7.0 - 8.5





RED LAKE TWP WPCP
WATER POLLUTION CONTROL PLANT

DESIGN DATA

PROJECT Red Lake Twp. WPCP

PROJECT NO. 1-0040-66

TREATMENT Contact Stabilization

DESIGN FLOW 0.3 mgd

BOD - Raw Sewage 510 lb/day

RAW SEWAGE PUMPING:

Pumping Station 1

Two, 430 USGPM at 68' TDH

Pumping Station 2

Two, 125 USGPM at 51' TDH

PRETREATMENT

GRIT CHANNELS:

Two, each 20' x 2' x 2'8" swd

Volume: (each) 650 I. Gal. Detention: (each) 3 min.

BAR SCREENS:

$\frac{1}{4}$ " x 2" steel bars on 2" centers

BIOLOGICAL TREATMENT

MIXING TANK:

Volume: 33,400 I. Gal.

Contact Time: 2.7 hours

REAERATION TANK:

Volume: 77,400 I. Gal.

CLARIFIER:

25'8" dia. x 15' swd

Volume: 48,200 I. Gal.

Detention: 3.9 hours

Overflow Rate: 580 I. Gal/ft²/day

AEROBIC DIGESTER:

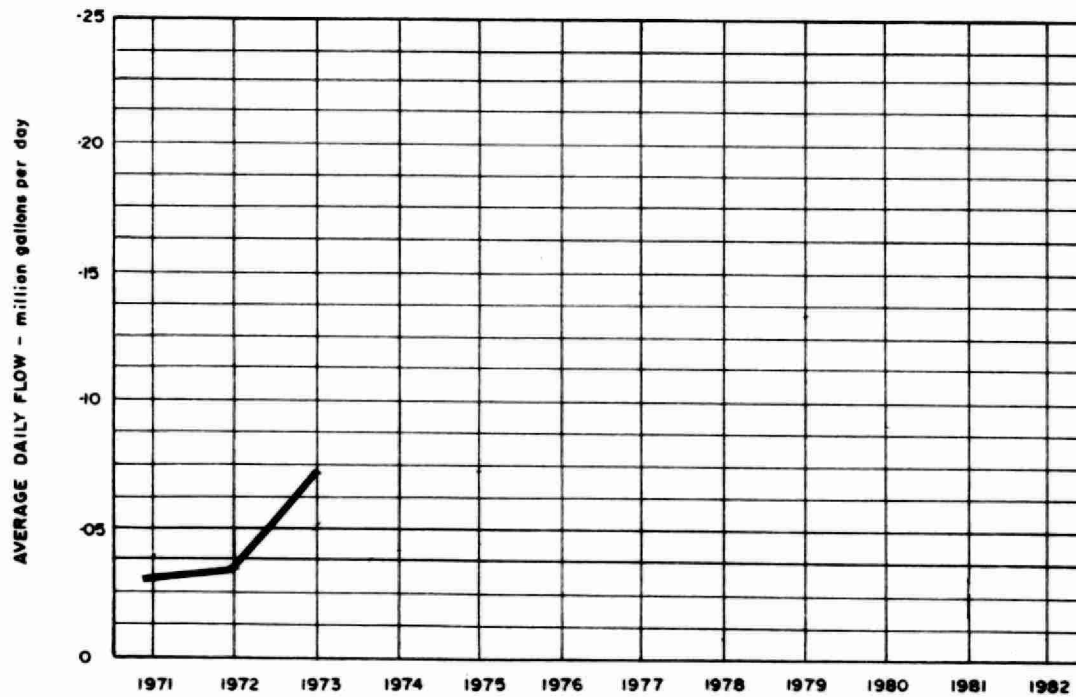
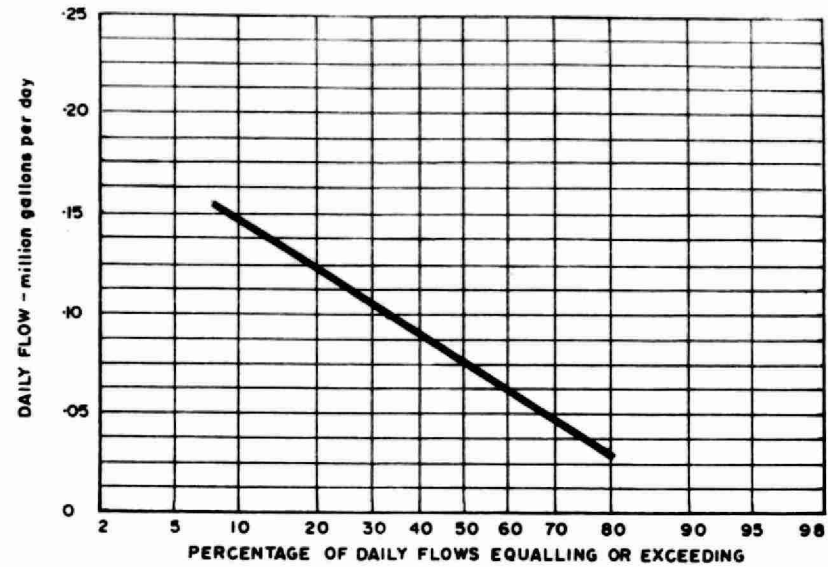
Volume: 48,000 I. Gal.

CHLORINE CONTACT CHAMBER:

Volume: 8400 I. Gal.

Detention: 40 min.

PROCESS DATA FLOWS



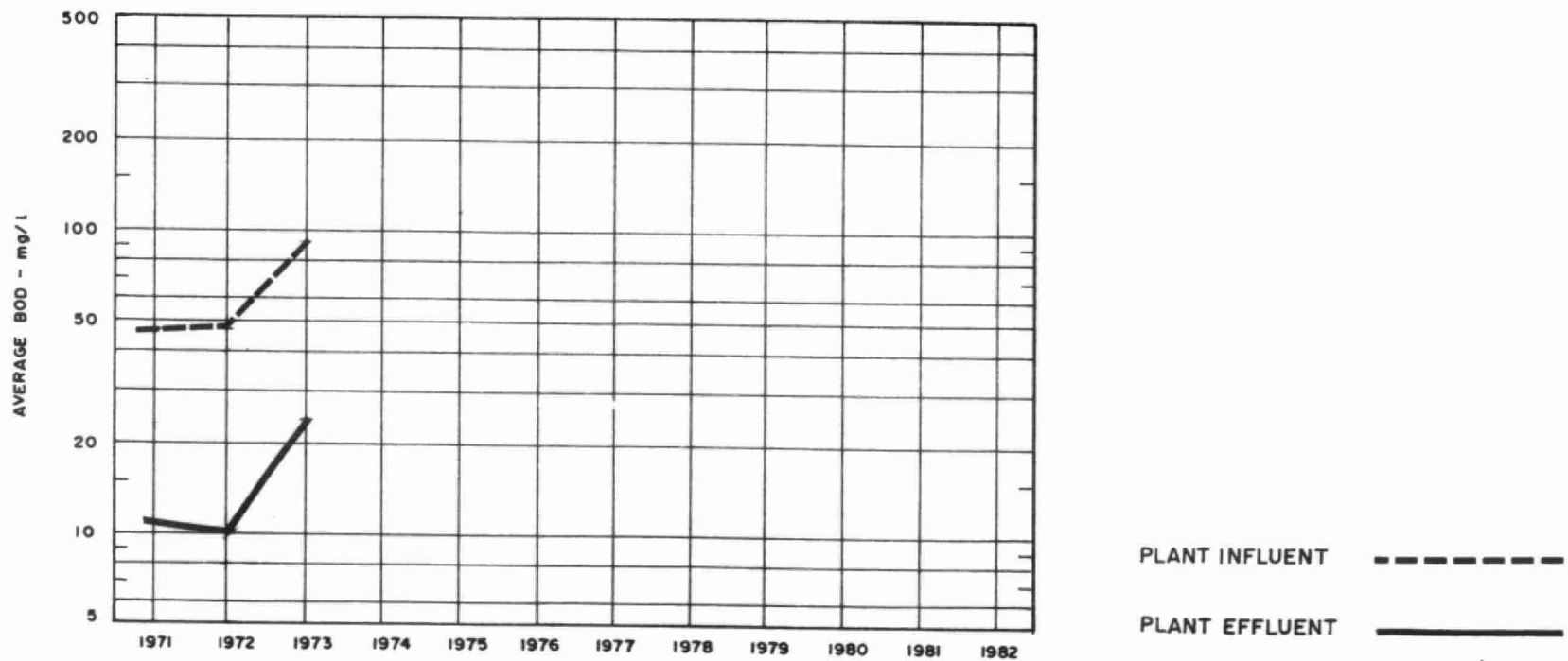
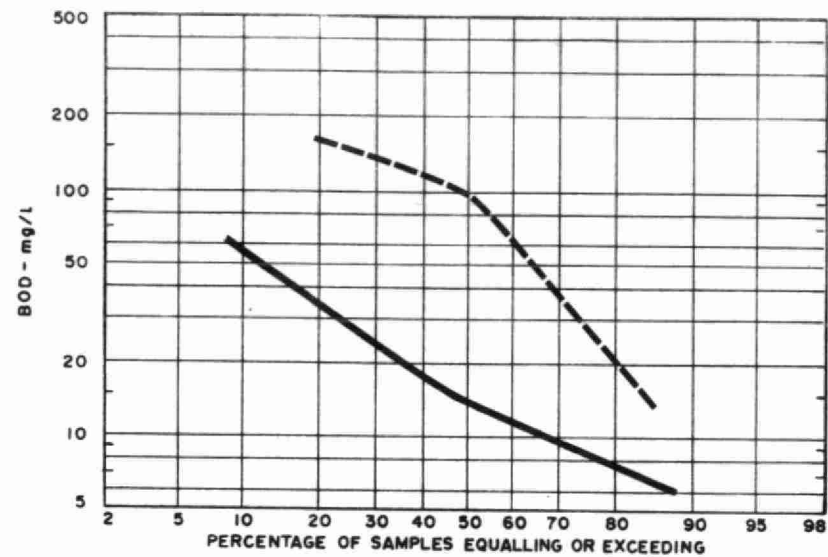
DESIGN CAPACITY 0.25 MGD

PLANT PERFORMANCE

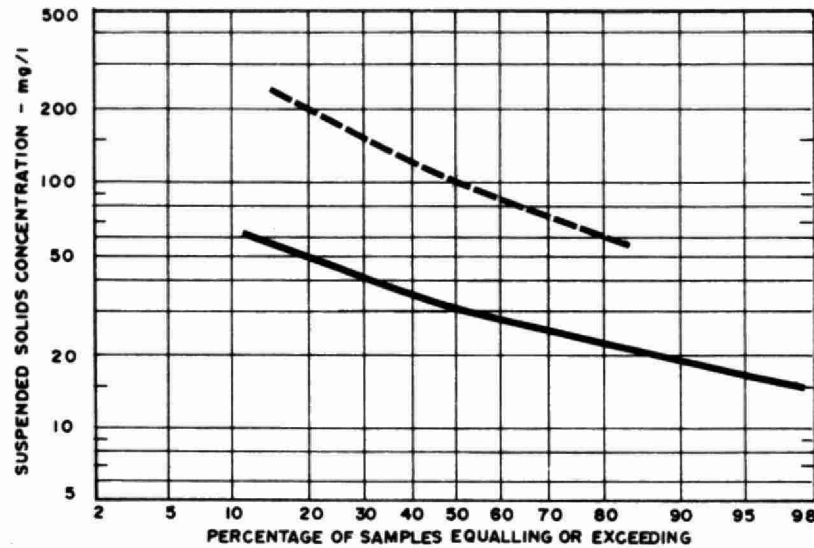
MONTH	FLOWS			BIOCHEMICAL OXYGEN DEMAND				SUSPENDED SOLIDS				PHOSPHORUS	
	TOTAL FLOW	AVERAGE DAY	MAXIMUM DAY	INFLUENT	EFFLUENT	REDUCTION		INFLUENT	EFFLUENT	REDUCTION		INFLUENT	EFFLUENT
	million gallons	mil. gal	mgd	mg/l	mg/l	%	pounds	mg/l	mg/l	%	pounds	mg/l P	mg/l P
JAN	1.04	0.034	0.04	24	6	75	187	60	15	75	467	2.1	3.0
FEB	1.07	0.038	0.04	40	8	80	342	50	20	60	320	3.8	4.0
MAR	1.67	0.055	0.08	65	19	71	766	310	55	82	4248	3.4	4.7
APR	1.09	0.036	0.06										
MAY	2.30	0.074	0.14										
JUNE	4.34	0.145	0.18	170	100	41	3035	140	270			18.0	9.0
JULY	4.22	0.136	0.16		28				25				9.8
AUG	4.29	0.138	0.17	140	20	86	5146	95	30	68	2787	15.0	3.8
SEPT	4.20	0.140	0.16										
OCT	2.70	0.087	0.13										
NOV	1.02	0.033	0.07	110	8	92	1038	120	17	86	1048	5.8	2.6
DEC													
TOTAL	27.38*	-	-	-	-	-		-	-	-		-	-
AVG.		0.075	MAXIMUM 0.18	91	25	74	1752	129	56	74	1774	8.0	4.9
No. of Samples	-	-	-	6	8	-	-	6	8	-	-	6	8

* Estimate

BIOCHEMICAL OXYGEN DEMAND

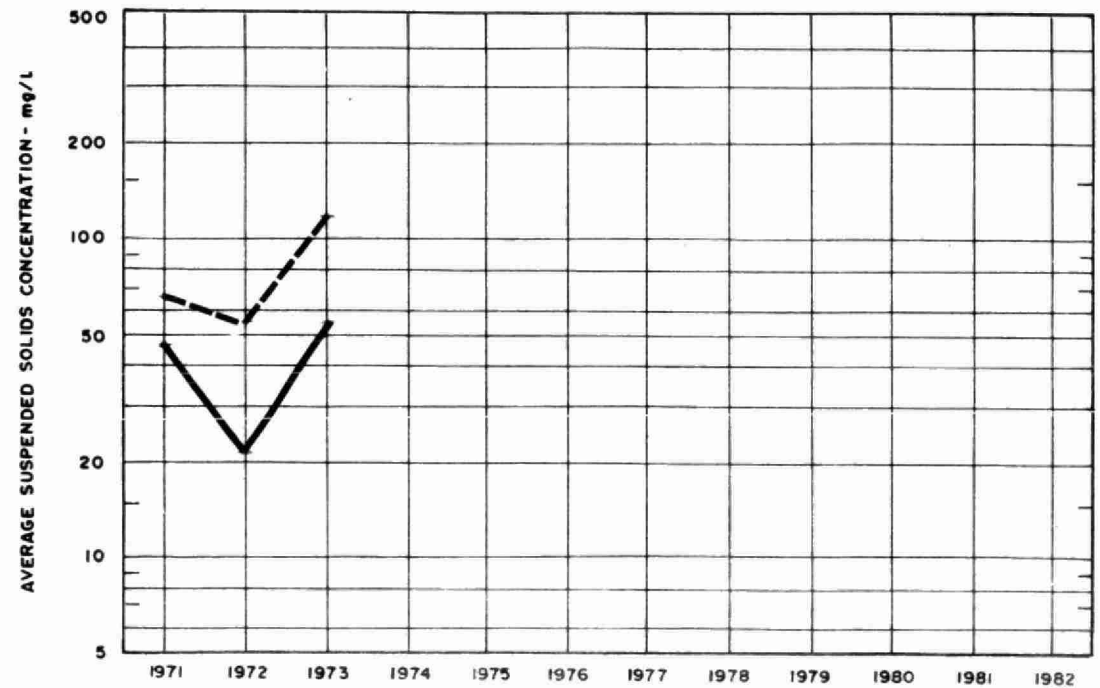


SUSPENDED SOLIDS

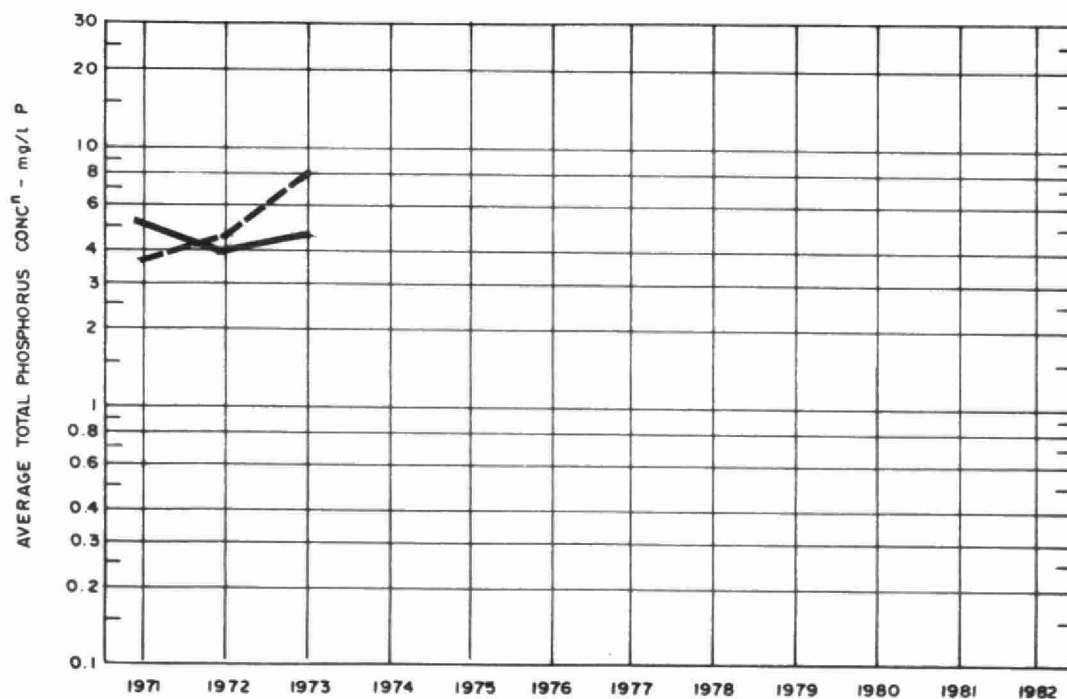
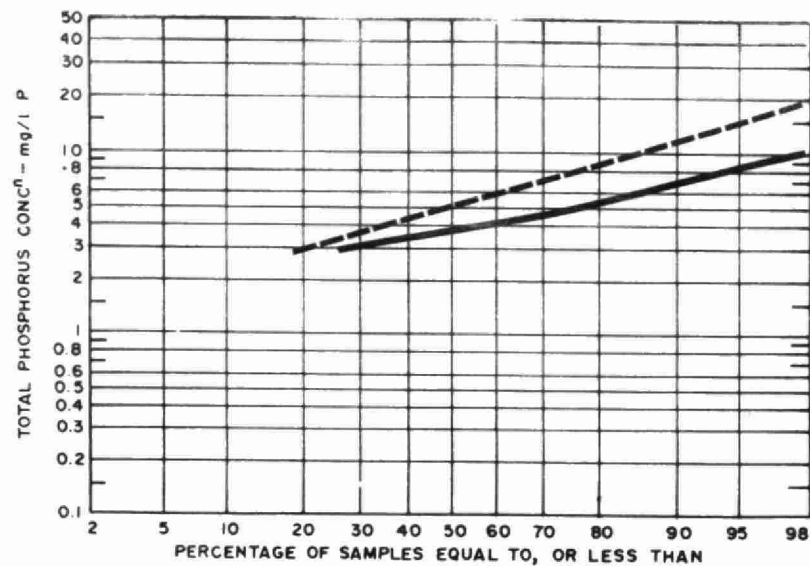


PLANT INFLUENT - - - - -

PLANT EFFLUENT —————



PHOSPHORUS



PLANT INFLUENT -----

PLANT EFFLUENT _____

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